

## CLAIMS

1. A network configured to transfer data using time-division multiplexing comprising:
  - a first network node having a first wireless interface and a second wireless interface;
  - a second network node having a third wireless interface coupled to the first wireless interface of the first network node; and
  - a third network node coupled to the first network node and the second network node.
2. The network of Claim 1, wherein the third network node comprises a fourth wireless interface coupled to the second wireless interface of the first network node.
3. The network of Claim 2, wherein the third network node is coupled to second network node using one or more optical fibers.
4. The network of Claim 2, further comprising a fourth network node coupled between the third network node and the first network node.
5. The network of Claim 1, wherein the first wireless interface is a radio frequency wireless interface.
6. The network of Claim 1, wherein the first wireless interface is a free-space optics wireless interface.
7. The network of Claim 1, wherein the network is also configured to transfer data using packets.

8. The network of Claim 1, wherein the first network node further comprises a cross connect switch coupled to the first wireless interface and the second wireless interface.

9. The network node Claim 8, wherein the first network node further comprises a TDM user interface coupled to the cross-connect switch and configured for data using time-division multiplexing.

10. The network of Claim 8, wherein the cross connect switch comprises:

a first TDM Framer/Deframer coupled to the first wireless interface and configured to deframe a first TDM frame from the first wireless interface; and

a second TDM Framer/Deframer coupled to the a second wireless interface and configured to form a second TDM data frame.

11. The network of Claim 8 wherein the cross connect unit is a Packet/TDM cross connect unit configured to process TDM data and packet data.

12. The network of Claim 11, wherein the first network node further comprises a packet user interface coupled to the cross-connect switch and configured for packet based data.

13. The network of Claim 11, wherein the Packet/TDM cross connect unit further comprises:

a packet switch coupled to the packet user interface;  
and

a TDM cross connect coupled to the TDM user interface.

14. The network of Claim 8, wherein the first wireless interface comprises:

a physical layer interface coupled to the cross connect switch;

an optical transceiver coupled to the physical layer interface and configured to convert an outgoing data stream from an outgoing electrical signal to an outgoing optical signal; and

a media abstraction unit coupled to the optical transceiver and configured to reframe the outgoing data stream from the outgoing optical signal to a second outgoing electrical signal suited for wireless transmission.

15. The network of Claim 14, wherein the wireless interface is configured to convert an incoming wireless signal to a first incoming electrical signal.

16. The network of Claim 14, wherein the media abstraction unit comprises a link quality management unit configured to adapt one or more parameters of the first wireless interface to provide more reliable data transmission.

17. The network of Claim 16, wherein the link quality management unit comprises a transmission power control unit.

18. The network of Claim 17, wherein the transmission power control unit 1310 is configured to adapt the transmission power of the multi-medium network interface.

19. The network of Claim 18, wherein the link quality management unit comprises a modulation control unit.

20. The network of Claim 19, wherein the modulation control unit comprises a signal quality detector configured to measure a signal quality of an incoming data stream.

21. The network of Claim 20, wherein the modulation control unit is configured to adapt the modulation of an outgoing data stream.

22. The network of Claim 16, wherein the link quality management unit further comprises:

an error correction code encoding unit configured to add redundancy to an outgoing data stream; and

an ECC level control unit coupled to the error correction code encoding unit.

23. The network of Claim 22, wherein the ECC level control unit controls the amount of redundancy added by the error correction code encoding unit.

24. The network of Claim 1, wherein the first wireless interface is part of a multi-medium network interface.

25. A network configured to transfer data using time division multiplexing comprising:

a first network node;

a second network node coupled to the first network node by a first link having a first bandwidth;

a third network node coupled to the second network node by a first wireless link having a second bandwidth;

wherein the first bandwidth is not equal to the second bandwidth.

26. The network of Claim 25, wherein the first link is an optical link.

27. The network of Claim 25, wherein the first wireless link is a free-space optics link.

28. The network of Claim 25, wherein the first wireless link is an RF wireless link.

29. The network of Claim 25, further comprising a fourth network node coupled to the third network node by a second link.

30. The network node of Claim 29, wherein the first link is an optical link and the second link is a wireless link.

31. The network of Claim 25, wherein data is transferred over the first link using a first protocol.

32. The network of Claim 31, wherein data is transferred over the first wireless link using a second protocol.

33. The network of Claim 25, wherein the first wireless link has a first bit error rate and the first link has a second bit error rate.